

ABSTRACT OF THE DISCLOSURE

A system and method are provided for forming a connective tissue construct, such as a tendon construct, *in vitro*. A substrate is provided with at least two anchors secured thereto in spaced relationship. Fibroblast cells are provided on the substrate in the absence of a synthetic matrix, where at least some of the cells are in contact with the anchors. The cells are cultured *in vitro* under conditions to allow the cells to self-organize and become confluent between the anchors, where the anchors are receptive to the cells and allow the cells to attach thereto while permitting the cells to detach from the substrate to form a three-dimensional connective tissue construct.